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10/655,546	09/05/2003	Ki-Yong Kim	Q76666	5567

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EXAMINER

CHOU, ALAN S

ART UNIT	PAPER NUMBER
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2151

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/655,546

Applicant(s)

KIM, KI-YONG

Examiner

Alan S. Chou

Art Unit

2151

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claims 1-22 are presented for examination.

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 10-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Virtual machine as claimed is software and thus directed to a non-statutory subject matter.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 5-6, 9, and 21-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Boudnik et al. U.S. Patent Number 7,167,894 B1 (hereinafter Boudnik).
5. As per claims 1, 5, and 21-22, Boudnik discloses a distributed processing system comprising: a distributed processing server which maintains connection information

Art Unit: 2151

regarding a plurality of clients (see first and second computer on column 2 line 34-37), divides a task into small tasks, and transmits to each client a task program, each of the clients storing respective content of each task session and respective task data required for each of the small tasks (see dispatching tasks to various servers on column 9 line 64-67 to column 10 line 20-25), wherein one of the plurality of the clients receives a first task program through a network using a predetermined protocol, loads the first task program onto a virtual machine (see task object on column 1 line 34-44), receives first task data to run the first task program, and transmits a first task execution result to the distributed processing server through the network (see returning output results on column 10 line 30-35).

6. As per claims 2, 6, and 9, Boudnik discloses the system of claim 1, wherein the first task program is written in a script language that can be interpreted by the virtual machine (see task script language on column 2 line 5-10).

7. As per claims 3 and 7, Boudnik discloses the system of claim 1, wherein the predetermined protocol is defined by a script language in the first task program (see Jini task program protocol on column 5 line 1-4).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2151

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 4, 10, 14-15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boudnik as applied to claims 1 above, further in view of Scheifler et al. U.S. Patent Application Publication Number 2002/0046228 A1 (hereinafter Scheifler), further in view of Focazio et al. U.S. Patent Application Publication Number 2002/0093683 A1 (hereinafter Focazio), further in view of Kimura U.S. Patent Application Publication Number 2002/0035591 A1 (hereinafter Kimura), and further in view of Menezes et al. U.S. Patent Number 7,127,446 B1 (hereinafter Menezes).

10. As per claims 4 and 10, Boudnik does not disclose expressly the details of the client virtual machine. Boudnik does not specifically disclose having a main module within the client virtual machine. Scheifler teaches the use of controlling modules in a Java virtual machine (see control module 19 on page 4 section [0044]). Boudnik and Scheifler are analogous art because they are from the same field of endeavor, distributed processing system using Java Virtual Machine. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a control module to manage execution environment within the virtual machine. The motivation for doing so would have been to conserve and regulate system resources. Therefore, it would have been obvious to combine Boudnik and Scheifler for the benefit of a controlling main module within a virtual machine to obtain the invention as specified in claims 4 and 10.

Art Unit: 2151

11. As per claims 4 and 10, Boudnik does not specifically disclose having an interpreter module within the client virtual machine. Focazio teaches the use of an interpreter module within the virtual machine to decode and execute bytecodes (see page 4 section [0058]). Boudnik and Focazio are analogous art because they are from the same field of endeavor, distributed processing system using Java Virtual Machine. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use an interpreter module to manage execution environment within the virtual machine. The motivation for doing so would have been to support multiple operation system architectures through the use of architecture-neutral bytecodes. Therefore, it would have been obvious to combine Boudnik and Focazio for the benefit of an interpreter module within a virtual machine to obtain the invention as specified in claims 4 and 10.

12. As per claims 4 and 10, Boudnik does not specifically disclose having a designer module within the client virtual machine. Kimura teaches the use of a remote reference control unit 4 within the virtual machine to keep track of the remote references made within the virtual machine (see page 3 section [0031]). Boudnik and Kimura are analogous art because they are from the same field of endeavor, distributed processing system using Java Virtual Machine. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a designer module to store external component used within the current virtual machine. The motivation for doing so would have been to keep track of the remote reference used by the current virtual machine. Therefore, it would have been obvious to combine Boudnik and Kimura for the benefit of

Art Unit: 2151

a designer module within a virtual machine to obtain the invention as specified in claims 4 and 10.

13. As per claims 4 and 10, Boudnik does not specifically disclose having a system object module within the client virtual machine. Kimura teaches the use of instanced server object within the virtual machine to keep track of the server objects created to be used within the virtual machine (see page 3 section [0028]). Boudnik and Kimura are analogous art because they are from the same field of endeavor, distributed processing system using Java Virtual Machine. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a system object module to store instanced object components used within the current virtual machine. The motivation for doing so would have been to keep track of the instanced server object used by the current virtual machine. Therefore, it would have been obvious to combine Boudnik and Kimura for the benefit of a system object module within a virtual machine to obtain the invention as specified in claims 4 and 10.

14. As per claims 4 and 10, Boudnik does not specifically disclose having a task module within the client virtual machine. Menezes teaches the use of task queue directory within each virtual machine to keep track of the received tasks that need to be executed by the virtual machine (see column 4 line14-20). Boudnik and Menezes are analogous art because they are from the same field of endeavor, distributed processing system using Java Virtual Machine. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a task module to store keep track of the tasks to be executed by the virtual machine. The motivation for doing so would

Art Unit: 2151

have been to delegate complex scheduled tasks to be executed by the virtual machine. Therefore, it would have been obvious to combine Boudnik and Menezes for the benefit of a task module within a virtual machine to obtain the invention as specified in claims 4 and 10.

15. As per claims 14, Kimura discloses the virtual machine of claim 12, wherein the original file is received from a distributed processing server, other storage devices, or local discs coupled to the Internet, wherein the distributed processing server transmits only information regarding storage locations of original files (see remote reference control unit 4 on page 3 section [0031]).

16. As per claims 15, Kimura and Scheifler discloses the virtual machine of claim 10, wherein the designer module includes: an event handler which creates event handler events; and a plurality of object containers which are prepared in each session (see remote reference control unit 4 on page 3 section [0031] by Kimura), each of the plurality of the object containers including a plurality of components, and are accessed from the interpreter module included in each session (see dynamically linked instances of classes on page 4 section [0044] by Scheifler).

17. As per claim 20, Menezes discloses the virtual machine of claim 10, wherein the task module includes: the plurality of the tasks registered as register process functions (see task queue 140 on column 4 line 14-19); a task manager which manage the

Art Unit: 2151

plurality of the tasks (see task producer 130 on column 4 line 39-52); a thread manager which executes the plurality of the tasks (see task consumers 160,180 on column 3 line 50-57); and a task buffer which stores the plurality of the tasks (see task queue 140 on column 4 line 14-19).

18. Claim 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boudnik and further in view of Sokolov U.S. Patent Application Publication Number 2003/0041317 A1 (hereinafter Sokolov).

19. As per claim 8, Boudnik discloses a distributed processing system similar to the rejected claim 1 above with additional limitation of macro instructions and interpreter modules. Boudnik does not disclose expressly the details of the client virtual machine. Boudnik does not specifically disclose using interpreter modules to translate macro instructions into tasks for the virtual machine. Sokolov teaches the use of interpreter to translate macro instructions into instructions executable by a Java virtual machine (see page 2 section [0018]). Boudnik and Sokolov are analogous art because they are from the same field of endeavor, Java Virtual Machine task management system. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use an interpreter module to translate macro instructions within the virtual machine. The motivation for doing so would have been to translate macro instructions into instructions executable by the Java virtual machine. Therefore, it would have been obvious to combine Boudnik and Sokolov for the benefit of using interpreter module to translate

Art Unit: 2151

macro instructions within a virtual machine to obtain the invention as specified in claims

8.

20. Claims 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boudnik as applied to claims 1 above, further in view of Scheifler et al. U.S. Patent Application Publication Number 2002/0046228 A1 (hereinafter Scheifler), further in view of Focazio et al. U.S. Patent Application Publication Number 2002/0093683 A1 (hereinafter Focazio), further in view of Kimura U.S. Patent Application Publication Number 2002/0035591 A1 (hereinafter Kimura), further in view of Menezes et al. U.S. Patent Number 7,127,446 B1 (hereinafter Menezes), and further in view of Gigliotti et al. U.S. Patent Number 6,393,458 B1 (hereinafter Gigliotti).

21. As per claims 11, Scheifler discloses the virtual machine of claim 10, wherein the main module includes: a main process manager which manages the plurality of the tasks that will be executed in each client through sessions and manages a script interpreting process for each of the sessions (see interpreting Java program and dynamically link instance of classes on page 4 section [0044]); an event processor which receives events created by objects dynamically bound in each of the sessions and transmits the events to the interpreter module (see dynamically link instances of classes on page 4 section [0044]), in which the events are interpreted; and a single process manager which manages one of the sessions and executes a script interpreting process for the one of the sessions (see interpreting Java program on page 4 section

Art Unit: 2151

[0044]). Scheifler does not disclose expressly the use of a load balance process that adjusts a script interpreting process load for each of the sessions. Gigliotti teaches load balancing in a distributed processing object environment (see column 2 line 55-65).

Scheifler and Gigliotti are analogous art because they are from the same field of endeavor, distributed processing task management system. At the time of the invention it would have been obvious to a person of ordinary skill in the art to incorporate load balancing process with the interpreting process within the virtual machine. The motivation for doing so would have been to save system resources within the Java virtual machine. Therefore, it would have been obvious to combine Scheifler and Gigliotti for the benefit of using load balancing functions within a virtual machine to obtain the invention as specified in claims 11.

22. Claims 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boudnik as applied to claims 1 above, further in view of Scheifler et al. U.S. Patent Application Publication Number 2002/0046228 A1 (hereinafter Scheifler), further in view of Focazio et al. U.S. Patent Application Publication Number 2002/0093683 A1 (hereinafter Focazio), further in view of Kimura U.S. Patent Application Publication Number 2002/0035591 A1 (hereinafter Kimura), further in view of Menezes et al. U.S. Patent Number 7,127,446 B1 (hereinafter Menezes), and further in view of Rogers et al. U.S. Patent Number 6,405,111 B2 (hereinafter Rogers).

Art Unit: 2151

23. As per claims 16, Boudnik does not disclose expressly the use of active X components to create events. Rogers teaches the use of Active X component object model in Windows environment instead of Java applets (see column 5 line 9-40). Boudnik and Rogers are analogous art because they are from the same field of endeavor, virtual machine applet component system. At the time of the invention it would have been obvious to a person of ordinary skill in the art to interchange Active X component with Java applets within the virtual machine. The motivation for doing so would have been to be able to run Java virtual machine in a Windows machine through using Active X components. Therefore, it would have been obvious to combine Boudnik and Rogers for the benefit of using Active X within a virtual machine to obtain the invention as specified in claims 16.

24. Claims 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boudnik as applied to claims 10 above, further in view of Scheifler et al. U.S. Patent Application Publication Number 2002/0046228 A1 (hereinafter Scheifler), further in view of Focazio et al. U.S. Patent Application Publication Number 2002/0093683 A1 (hereinafter Focazio), further in view of Kimura U.S. Patent Application Publication Number 2002/0035591 A1 (hereinafter Kimura), and further in view of Menezes et al. U.S. Patent Number 7,127,446 B1 (hereinafter Menezes), and further in view of Sokolov U.S. Patent Application Publication Number 2003/0041317 A1 (hereinafter Sokolov).

Art Unit: 2151

25. As per claim 12, Focazio, Kimura, and Menezes discloses various elements of the virtual machine of claim 10, wherein the interpreter module includes: an interpreter engine manager which interprets a one of the plurality of the tasks requested by the single process manager that is bound in a session object (see task queue 140 column 4 line 14-19 by Menezes); a scripting engine which runs the task program written in the script language (see task consumers 155 executing task script files on column 3 line 50-55 by Menezes); a preprocessor which processes both a conventional syntax used in the virtual machine and a predetermined syntax to expand processing functionality of the virtual machine (see translating to architecture-natural file or bytecode on page 4 section [0058] by Focazio); a macro processor which registers a macro code and interprets the registered macro code; and a script loader which reads an original file, containing the one task that will be executed and converts the original file to a script-source-type file so that the scripting engine can execute the one task (see remote reference control unit4 acquires network address on page 3 section [0031] by Kimura).

26. Boudnik, Scheifler, Focazio, Kimura, and Menezes do not disclose specifically using interpreter modules to translate macro instructions into tasks for the virtual machine. Sokolov teaches the use of interpreter to translate macro instructions into instructions executable by a Java virtual machine (see page 2 section [0018]). Boudnik and Sokolov are analogous art because they are from the same field of endeavor, Java Virtual Machine task management system. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use an interpreter module to translate macro instructions within the virtual machine. The motivation for doing so

Art Unit: 2151

would have been to translate macro instructions into instructions executable by the Java virtual machine. Therefore, it would have been obvious to combine Boudnik and Sokolov for the benefit of using interpreter module to translate macro instructions within a virtual machine to obtain the invention as specified in claims 12.

27. Claims 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boudnik as applied to claims 10 above, further in view of Scheifler et al. U.S. Patent Application Publication Number 2002/0046228 A1 (hereinafter Scheifler), further in view of Focazio et al. U.S. Patent Application Publication Number 2002/0093683 A1 (hereinafter Focazio), further in view of Kimura U.S. Patent Application Publication Number 2002/0035591 A1 (hereinafter Kimura), and further in view of Menezes et al. U.S. Patent Number 7,127,446 B1 (hereinafter Menezes), and further in view of Sokolov U.S. Patent Application Publication Number 2003/0041317 A1 (hereinafter Sokolov), and further in view of Levy et al. U.S. Patent Application Publication Number 2004/0068726 A1 (hereinafter Levy).

28. As per claim 13, Boudnik do not disclose specifically using encryption/decryption modules to maintain security of the interpreter module. Levy teaches the use of bytecode verification in a virtual machine environment (see page 1 section [0008]). Boudnik and Levy are analogous art because they are from the same field of endeavor, Java Virtual Machine task management system. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a bytecode verification

Art Unit: 2151

system within the virtual machine. The motivation for doing so would have been to maintain security in the virtual machine environment. Therefore, it would have been obvious to combine Boudnik and Levy for the benefit of bytecode verification within a virtual machine to obtain the invention as specified in claims 13.

29. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boudnik as applied to claims 1 above, further in view of Scheifler et al. U.S. Patent Application Publication Number 2002/0046228 A1 (hereinafter Scheifler), further in view of Focazio et al. U.S. Patent Application Publication Number 2002/0093683 A1 (hereinafter Focazio), further in view of Kimura U.S. Patent Application Publication Number 2002/0035591 A1 (hereinafter Kimura), and further in view of Menezes et al. U.S. Patent Number 7,127,446 B1 (hereinafter Menezes), and further in view of Kolodner et al. U.S. Patent Number 6,912,553 B1 (hereinafter Kolodner), and further in view of Cabillic et al. U.S. Patent Application Publication Number 2003/0079213 A1 (hereinafter Cabillic).

30. As per claims 17-19, Boudnik does not disclose expressly the global and local objects that are used with the virtual machine. Kolodner teaches the use of both global and local object in a virtual machine environment (see column 7 line 53-67). Boudnik and Kolodner are analogous art because they are from the same field of endeavor, Java Virtual Machine task management system. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use both local and global objects

Art Unit: 2151

within the virtual machine. The motivation for doing so would have been to access both public and private objects in a virtual machine environment. Therefore, it would have been obvious to combine Boudnik and Kolodner for the benefit of both local and global object within a virtual machine to obtain the invention as specified in claims 17-19.

31. As per claim 17, Boudnik does not disclose expressly the debug objects that are used with the virtual machine. Cabillic teaches the use of debug modules and error handling in a virtual machine environment (see section [0087]). Boudnik and Cabillic are analogous art because they are from the same field of endeavor, Java Virtual Machine task management system. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use debug objects within the virtual machine. The motivation for doing so would have been to maintain debug functions in a virtual machine environment. Therefore, it would have been obvious to combine Boudnik and Cabillic for the benefit of debug object within a virtual machine to obtain the invention as specified in claim 17.

32. As per claims 17, Boudnik does not specifically disclose having a designer object within the client virtual machine. Kimura teaches the use of a remote reference objects from another Java machine (see page 2 section [0026]). Boudnik and Kimura are analogous art because they are from the same field of endeavor, distributed processing system using Java Virtual Machine. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a designer object to store external component used within the current virtual machine. The motivation for doing so would have been to keep track of the remote reference used by the current virtual machine.

Art Unit: 2151

Therefore, it would have been obvious to combine Boudnik and Kimura for the benefit of a designer object within a virtual machine to obtain the invention as specified in claim 17.

33. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Meeting System and Information Storage Medium by Kamakura et al., U.S. Patent Number 7,251,675 B1.

b) Client Container for Building EJB-Hosted Java Applications by Demuth et al., U.S. Patent Application Publication Number 2003/0212987 A1.

c) Object-Oriented Network Management Interface by Lavian et al., U.S. Patent Number 7,260,621 B1.

d) Techniques for Debugging Computer Programs Involving Multiple Programming Languages by Alpern, U.S. Patent Number 7,107,578 B1.

e) Topological, On-the-Fly Classification of Objects into a Global set and Local Sets by Christiaens U.S. Patent Application Publication Number 2002/0120428 A1.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan S. Chou whose telephone number is (571) 272-5779. The examiner can normally be reached on 7am-3pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Valencia Martin-Wallace can be reached on (571)272-3440. The fax phone

Art Unit: 2151

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AC


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